Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1–26. Canceled)

Claim 27 (Currently Amended) A composition comprising at least one protein selected from the group consisting of isopropyl malate synthase (Rv3710), s-adenosylmethionine synthase metK (Rv1392), succinyl-CoA synthase -chain sucD (Rv0952), oxidoreductase of aldo/keto reductase family (Rv2971), oxidoreductase (Rv0068), elongation factor G (Rv0120c), uridylate kinase (Rv2883c), ABC-type transporter (Rv1463), short chain dehydrogenase/reductase family protein (Rv1856c), 1,3,4,6-tetrachloro-1,4,-cyclohexadiene hydrolase (Rv2579), phosphoribosyl-aminoimidazole carboxylase catalytic subunit (Rv3275c), hypothetical protein (Rv2557), and hypothetical protein (Rv3407), hypothetical protein (Rv3881c), hypothetical protein (Rv2449c), hypothetical protein (Rv0036c), hypothetical protein (Rv2005c) and transcriptional regulator (Crp/Fnr family) (Rv3676) which is differentially expressed in a virulent strain as compared to an avirulent strain of the genus Mycobacterium.

Claim 28 (Previously Presented) The composition of claim 27, wherein said strains are selected from the group consisting of *M. tuberculosis, M. bovis, M. avium, M. africanum, M. kanasasii, M. intracellulare, M. ulcerans, M. paratuberculosis, M. simiae, M. scrofulaceum, M. szulgai, M. xenopi, M. fortuitum, M. chelonei, M. leprae* and *M. marinum.*

Claim 29 (Previously Presented) The composition of claim 27, wherein said protein is differentially expressed in the virulent strain, *M. tuberculosis*, as compared to the avirulent strain, *M. bovis.*

Claim 30 (Previously Presented) The composition of claim 29, wherein said virulent strain is *M. tuberculosis* H37Rv or *M. tuberculosis Erdman* and said avirulent strain is *M. bovis* BCG.

Claim 31 (Previously Presented) The composition of claim 30 wherein said protein is differentially expressed in *M. tuberculosis* H37Rv or *M. tuberculosis Erdman* as compared to *M. bovis* BCG.

Claim 32 (Previously Presented) The composition of claim 27, wherein said protein is selected from the group consisting of isopropyl malate synthase (Rv3710), s-adenosylmethionine synthase metK (Rv1392), succinyl-CoA synthase -chain sucD (Rv0952), oxidoreductase of aldo/keto reductase family (Rv2971), oxidoreductase (Rv0068), elongation factor G (Rv0120c), uridylate kinase (Rv2883c), ABC-type transporter (Rv1463), short chain dehydrogenase/reductase family protein (Rv1856c), 1,3,4,6-tetrachloro-1,4,-cyclohexadiene hydrolase (Rv2579), phosphoribosyl-aminoimidazole carboxylase catalytic subunit (Rv3275c), hypothetical protein (Rv2557), and hypothetical protein (Rv3407), hypothetical protein (Rv3881c), hypothetical protein (Rv2449c), hypothetical protein (Rv0036c), hypothetical protein (Rv2005c) and transcriptional regulator (Crp/Fnr family) (Rv3676).

Claim 33 (Previously Presented) The composition comprising at least one differentially expressed protein of claim 27, wherein said differentially expressed protein is biochemically modified, biophysically modified, recombinantly modified or a combination thereof.

Claim 34 (Previously Presented) A composition comprising an antigenic fragment of the protein of claim 27.

Claim 35 (Previously Presented) A fusion protein comprising a protein of claim 27, an antigenic fragment of said protein or a combination thereof.

Claim 36 (Previously Presented) A fusion protein comprising at least two proteins of claim 27, at least one antigenic fragment of the protein of claim 27 or a combination thereof.

Claim 37 (Previously Presented) The fusion protein of claim 35, wherein said fusion protein comprises an immunostimulatory molecule.

Claim 38 (Previously Presented) The fusion protein of claim 36, wherein said fusion protein comprises an immunostimulatory molecule.

Claim 39 (Previously Presented) The fusion protein of claim 35, wherein said fusion protein comprises a molecule capable of optimizing antigen processing.

Claim 40 (Previously Presented) The fusion protein of claim 36, wherein said fusion protein comprises a molecule capable of optimizing antigen processing.

Claim 41 (Previously Presented) A composition comprising at least one fusion protein of claim 35.

Claim 42 (Previously Presented) A composition comprising at least one fusion protein of claim 37.

Claim 43 (Previously Presented) A composition comprising at least one fusion protein of claim 39.

Claim 44 (Currently Amended) A nucleic acid molecule coding for a protein selected from the group consisting of isopropyl malate synthase (Rv3710), s-adenosylmethionine synthase metK (Rv1392), succinyl-CoA synthase -chain sucD (Rv0952), oxidoreductase of aldo/keto reductase family (Rv2971), oxidoreductase (Rv0068), elongation factor G (Rv0120c), uridylate kinase (Rv2883c), ABC-type transporter (Rv1463), short chain dehydrogenase/reductase family protein (Rv1856c), 1,3,4,6-tetrachloro-1,4,-cyclohexadiene hydrolase (Rv2579), phosphoribosyl-aminoimidazole carboxylase catalytic subunit (Rv3275c), hypothetical protein (Rv2557), and hypothetical protein (Rv3407), hypothetical protein (Rv3881c), hypothetical protein (Rv2449c), hypothetical protein (Rv0036c), hypothetical protein (Rv2005c) and transcriptional regulator (Crp/Fnr family) (Rv3676) which is differentially expressed in a virulent strain as compared to an avirulent strain of the

genus Mycobacterium, an antigenic fragment of said protein, a fusion protein comprising said protein, said antigenic fragment or a combination thereof.

Claim 45 (Previously Presented) A composition comprising at least one nucleic acid molecule of claim 44.

Claim 46 (Canceled)

Claim 47 (Canceled)

Claim 48 (Currently Amended) A composition comprising a composition selected from the group consisting of: a) at least one protein selected from the group consisting of isopropyl malate synthase (Rv3710), s-adenosylmethionine synthase metK (Rv1392), succinyl-CoA synthase -chain sucD (Rv0952), oxidoreductase of aldo/keto reductase family (Rv2971), oxidoreductase (Rv0068), elongation factor G (Rv0120c), uridylate kinase (Rv2883c), ABC-type transporter (Rv1463), short chain dehydrogenase/reductase family protein (Rv1856c), 1,3,4,6-tetrachloro-1,4,-cyclohexadiene hydrolase (Rv2579), phosphoribosyl-aminoimidazole carboxylase catalytic subunit (Rv3275c), hypothetical protein (Rv2557), and hypothetical protein (Rv3407), hypothetical protein (Rv3881c), hypothetical protein (Rv2449c), hypothetical protein (Rv0036c), hypothetical protein (Rv2005c) and transcriptional regulator (Crp/Fnr family) (Rv3676) which is differentially expressed in a virulent strain as compared to an avirulent strain of the genus Mycobacterium; b) an antigenic fragment of said protein; c) a fusion protein comprising at least one of said protein or an antigenic fragment of said protein, and d) a nucleic acid molecule of claim 44, wherein said composition is a pharmaceutical composition further comprising, optionally, a pharmaceutically acceptable carrier.

Claim 49 (Previously Presented) The composition of claim 48, wherein said composition comprises a pharmaceutically acceptable carrier and said composition is a vaccine.

Claim 50 (Previously Presented) A composition comprising a composition comprising selected from the group consisting of: a) at least one protein which is

differentially expressed in a virulent strain as compared to an avirulent strain of the genus Mycobacterium; b) an antigenic fragment of said protein; c) a fusion protein comprising at least one of said protein or an antigenic fragment of said protein, and d) a nucleic acid molecule of claim 44, wherein said composition is a diagnostic composition further comprising, optionally, suitable means for detection.

Claim 51 (Currently Amended) A method for the production of a vaccine against a virulent strain of the genus Mycobacterium comprising the steps of

(a) recombinantly expressing a differentially expressed protein selected from the group consisting of isopropyl malate synthase (Rv3710), s-adenosylmethionine synthase metK (Rv1392), succinyl-CoA synthase -chain sucD (Rv0952), oxidoreductase of aldo/keto reductase family (Rv2971), oxidoreductase (Rv0068), elongation factor G (Rv0120c), uridylate kinase (Rv2883c), ABC-type transporter (Rv1463), short chain dehydrogenase/reductase family protein (Rv1856c), 1,3,4,6-tetrachloro-1,4,-cyclohexadiene hydrolase (Rv2579), phosphoribosyl-aminoimidazole carboxylase catalytic subunit (Rv3275c), hypothetical protein (Rv2557), and hypothetical protein (Rv3407), hypothetical protein (Rv3881c), hypothetical protein (Rv2449c), hypothetical protein (Rv0036c), hypothetical protein (Rv2005c) and transcriptional regulator (Crp/Fnr family) (Rv3676), an antigenic fragment of said protein, or a fusion protein comprising said protein, an antigenic fragment of said protein or a combination thereof; and

(b) combining said recombinantly expressed differentially expressed protein, said antigenic fragment or said fusion protein with a pharmaceutically acceptable carrier.

Claim 52 (Previously Presented) A method for the production of a vaccine against a virulent strain of the genus Mycobacterium comprising combining a vector comprising a nucleic acid molecule of claim 44 with a biologically acceptable carrier,

wherein said nucleic acid molecule in said vector is placed under the control of an expression control sequence.

Claim 53 (Previously Presented) The method of claim 52, wherein a nucleic acid molecule encodes said protein, an antigenic fragment of said protein, or a fusion protein comprising said protein, an antigenic fragment of said protein or a combination thereof.

Claim 54 (Currently Amended) A method of preventing, ameliorating or treating a Mycobacterium induced disease comprising administering an effective amount of the vaccine of claim 49 to a subject to prevent, ameliorate or treat a Mycobacterium induced disease in said subject.

Claim 55 (Previously Presented) The method of claim 54, wherein said Mycobacterium induced disease is selected from the group consisting of tuberculosis, leprosy, tropical skin ulcer, ulceration, abscess, granulomatous (skin) disease, pulmonary disease, lymphadenitis, and cutaneous and disseminated disease.

Claim 56 (Previously Presented) A method of detecting the presence of Mycobacterium in a sample, comprising contacting the composition of claim 50 with a sample suspected of containing at least one component associated with Mycobacterium, wherein said component comprises Mycobacterium, pathogenic fragments thereof or derivatives thereof, proteins thereof or polynucleotides encoding said Mycobacterium, fragments thereof, derivatives thereof or proteins thereof, and detecting the presence of at least one component in said sample.

Claim 57 (Previously Presented) The method of claim 56, wherein said detection of said component associated with Mycobacterium is indicative of Mycobacterium induced disease selected from the group consisting of tuberculosis, leprosy, tropical skin ulcer, ulceration, abscess, granulomatous (skin) disease, pulmonary disease, lymphadenitis, and cutaneous and disseminated disease.

Claim 58 (Previously Presented) The composition of claim 45, wherein said strains are selected from the group consisting of *M. tuberculosis, M. bovis, M. avium, M.*

africanum, M. kanasasii, M. intracellulare, M. ulcerans, M. paratuberculosis, M. simiae, M. scrofulaceum, M. szulgai, M. xenopi, M. fortuitum, M. chelonei, M. leprae and *M. marinum*.

Claim 59 (Previously Presented) The composition of claim 45, wherein said protein is differentially expressed in the virulent strain, *M. tuberculosis*, as compared to the avirulent strain, *M. bovis*.

Claim 60 (Previously Presented) The composition of claim 59, wherein said virulent strain is *M. tuberculosis* H37Rv or *M. tuberculosis Erdman* and said avirulent strain is *M. bovis* BCG.

Claim 61 (Previously Presented) The composition of claim 60 wherein said protein is differentially expressed in *M. tuberculosis* H37Rv or *M. tuberculosis Erdman* as compared to *M. bovis* BCG.

Claim 62 (Previously Presented) The composition of claim 45, wherein said protein is selected from the group consisting of isopropyl malate synthase (Rv3710), s-adenosylmethionine synthase metK (Rv1392), succinyl-CoA synthase -chain sucD (Rv0952), oxidoreductase of aldo/keto reductase family (Rv2971), oxidoreductase (Rv0068), elongation factor G (Rv0120c), uridylate kinase (Rv2883c), ABC-type transporter (Rv1463), short chain dehydrogenase/reductase family protein (Rv1856c), 1,3,4,6-tetrachloro-1,4,-cyclohexadiene hydrolase (Rv2579), phosphoribosyl-aminoimidazole carboxylase catalytic subunit (Rv3275c), hypothetical protein (Rv2557), and hypothetical protein (Rv3407), hypothetical protein (Rv3881c), hypothetical protein (Rv2449c), hypothetical protein (Rv0036c), hypothetical protein (Rv2005c) and transcriptional regulator (Crp/Fnr family) (Rv3676).

Claim 63 (New) A nucleic acid molecule coding for hypothetical protein (Rv3407) which is differentially expressed in a virulent strain as compared to an avirulent strain of the genus Mycobacterium, an antigenic fragment of said protein, a fusion protein comprising said protein, said antigenic fragment or a combination thereof.

Claim 64 (New) A composition comprising a composition selected from the group consisting of: a) hypothetical protein (Rv3407) which is differentially expressed in a

virulent strain as compared to an avirulent strain of the genus Mycobacterium; b) an antigenic fragment of said protein; c) a fusion protein comprising at least one of said protein or an antigenic fragment of said protein, and d) a nucleic acid molecule of claim 63, wherein said composition is a pharmaceutical composition further comprising, optionally, a pharmaceutically acceptable carrier.

Claim 65 (New) The composition of claim 64, wherein said composition comprises a pharmaceutically acceptable carrier and said composition is a vaccine.

Claim 66 (New) A nucleic acid molecule coding for oxidoreductase (Rv0068) which is differentially expressed in a virulent strain as compared to an avirulent strain of the genus Mycobacterium, an antigenic fragment of said protein, a fusion protein comprising said protein, said antigenic fragment or a combination thereof.

Claim 67 (New) A composition comprising a composition selected from the group consisting of: a) oxidoreductase (Rv0068) which is differentially expressed in a virulent strain as compared to an avirulent strain of the genus Mycobacterium; b) an antigenic fragment of said protein; c) a fusion protein comprising at least one of said protein or an antigenic fragment of said protein, and d) a nucleic acid molecule of claim 66, wherein said composition is a pharmaceutical composition further comprising, optionally, a pharmaceutically acceptable carrier.

Claim 68 (New) The composition of claim 67, wherein said composition comprises a pharmaceutically acceptable carrier and said composition is a vaccine.